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ABOUT METHODS OF DECREASE IN FIRE HAZARD AT GAS STATIONS

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ABSTRACT

In article gas stations which are still subject to public appointment are considered and located in the territory of the cities and other settlements therefore the large number of people can get to a defeat zone at possible accidents, not being working personnel of an object. Ways and methods of risk reduction his rationality and expediency are also given at emergence of accident and prevention of its possible development.

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Introduction. The gas station (gas station) is complex of buildings, constructions and the corresponding equipment which is intended for refueling of the vehicle with liquid fuel also if necessary by oils, lubricants, technical liquids.

The gas station has to be located on highways and in settlements, in the places providing convenient arrival and departure of cars and mainly alee in relation to residential, production and public buildings (constructions). Planning of gas station taking into account seating in its territory of buildings and constructions has to exclude possibility of spreading of the emergency passage of fuel both across the territory of gas station and beyond its limits.

Main part. Today gas station the place where it is possible to fill in fuel in the car is not simple any more, it is the big and multipurpose complex consisting of fuel-dispensing columns and storages of fuel. As show probes, gas stations are still objects of the increased fire-and-explosion hazard. It is caused in large volumes of the stored fuel with high fire hazard and also features of the technological processes connected with reception, storage and delivery of fuel. Gas stations are subject to public appointment and are located in the territory of the cities and other settlements therefore the large number of people can get to defeat zone at possible accidents, not being working personnel of object.

Statistics shows that for the last 15 years in Uzbekistan at gas station there were 81 fires. The related losses, failures in work, threat to human health define relevance of a problem and demand acceptance of effective measures on strengthening of fire protection.

The existing types of gas station are characterized by various degree of the fire hazard caused by both constructive and space-planning solutions, and features of their placement in relation to surrounding objects. One more most complex current problem requiring the solution is definition of a sufficient and most rational complex of actions for ensuring the required level of fire safety for various types of gas station. The solution of the specified problem demands existence of methods of assessment of fire hazard of the objects allowing to consider features of a concrete object and influence of various applied actions for ensuring fire safety. Development of an effective complex of actions for ensuring fire safety at gas station is possible only at an integrated approach to a research and assessment of fire hazard, ways of its decrease taking into account all main processes connected with the fire, since a stage of operation of the station to the end results of the developing or suppressed fire.

Despite constant improvement of fire protection to achieve a situation that ignitions were not in general, it is not possible. An initial event of accident at gas station is leakage of easy fire up product that can occur owing to depressurization of the capacity (tank) of a tanker truck, an element of a bulk platform (a flexible hose) [3].

The most part of gas station is in private possession, and their safety directly dependence on that, how responsibly the owner and the working personnel treat fire safety regulations. The fact that gas stations of container, modular, mobile and block types are added to the constructed earlier traditional gas stations is of great importance. Volumes of the stored fuel at modern gas stations reach tens of cubic meters. And results of checks show that practically on each object violations of fire safety requirements take place.

Implementation of complex assessment of fire hazard of the considered objects, first of all, requires improvement of the existing methods of its quantitative assessment. Each gas station can have a different degree of fire hazard that is caused by the applied constructive and planning solutions, proximity of gas station to other objects. The cases taking place show that at gas station perhaps chain development of major accidents. That is, at emergence of ignition in one part of gas station, fire is thrown on tanks with fuel, the refueling cars that can provoke explosions and global destructions of the designs which are available nearby. Therefore at construction of gas station it is necessary to consider local features previously.

The analysis of accidents showed that prevention of the fires the raised difficulties at gas station, owing to specifics of an object, is possible only on the basis of preventive measures, that is increase in level of fire and explosion safety of technological processes. In this regard it is necessary to have constantly an opportunity to sort various disputable situations connected with motor transportation clients, to trace the procedure of discharge of oil products from tanker trucks and in case of damage of fuel-dispensing columns, to react immediately. Besides, safety of people, including employees of fire safety, at localization and elimination of the fires at gas station is represented very difficult.

The main reasons for emergence of accidents at gas station can be classified by the following signs:

- malfunction of electric equipment;
- the mechanical malfunctions of mechanisms, units and cars leading to sparking;
- naked flame (hot work);
- sparks;
- lightning discharges;
- spontaneous ignition and self-ignition;
- pyrophoric deposits;
- violation of the rules of fire safety by citizens in the territory of gas station.

These reasons lead to threat of life and human health and causing damage to economy, the environment. Therefore it is necessary to acquaint first of all personnel and visitors of the station with rules of conduct and to use the newest means of the fire warning. Depending on the nature of depressurization, weather and other conditions of accident can develop in the form of passages, the fires from passages, explosions, fiery spheres.

Results of assessment of fire hazard using both probable, and complex approaches, it is characterized by values of fire risk for gas station and development of ways of its decrease.

The risk is a frequency of implementation of dangers of a certain class. The risk can be defined as the probability of emergence of one event at approach of another, and the fire risk is a measure of a possibility of implementation of fire hazard of a subject to protection and its effects for people and material values. [4]

The main measures designed to ensure fire safety at gas station consist in the following [4]:

- maintenance in the territory of the enterprise of purity and an order. Pollution of drives, roads, blocking up of passes, especially ways to fire extinguishing means and fire extinguishing units is not allowed;
- inadmissibility of use of fire gaps between buildings and constructions for warehousing of various materials or as parking;
- the ban on use of naked flame in the territory of gas station;
- providing gas station with a reliable system of lightning protection;
- regular check of instrumentations;
- contents in working order fire extinguishing systems;
- use of slow-burning materials;
- drawing up rules of conduct of visitors at gas station;
- use of the latest sensors of ignition;
- ensuring safety of money and inventory items;
- restriction of access to premises of gas station and for the adjacent territory;
- prevention of illegal actions from personnel and third parties;
- the notification of personnel and clients of gas station about emergency situations;
- interaction with law enforcement state agencies on safety issues;
- use of new sorbents for removal of emergency oil spills and oil products on a water surface and soil;
- installation of a system of voice impact on the environment.

When developing ways of risk reduction the main focus has to be placed on reduction of probability of emergence of accident and prevention of its possible development. It, first of all, means promotion of higher requirements to processing equipment and its reliability for gas station. At the same time it is necessary to consider not only efficiency of this or that way of risk reduction, but also his rationality and expediency. [5]

Conclusion. It is for this purpose supposed to solve the following main objectives; to improve techniques of assessment of the fire hazard allowing to consider when determining fire risk such features of gas station as parameters of technological processes, a design of the equipment, buildings and constructions, their accommodation, a method of operation, the possible number of people on an object and around it, existence of systems of anti emergency and fire protection, etc.;

Estimate fire risks for different types of gas station (traditional, container, modular, mobile and block);

Analyze the factors influencing risk value for gas station and develop evidence-based ways of its decrease;

Define efficiency and optimality of the developed ways of decrease in fire risk.

Excellent job of gas station can be presented to realities so: production of reception, storage and issue of oil products at gas station is carried out according to the continuous scheme in the hermetic equipment, excluding contact working with oil products are located on the gas station platform underground; electric equipment is installed in explosion-proof execution; control and production control is exercised partially in the manual mode, partially automatically from a control panel operator, at the most dangerous violations of the technological mode signaling is provided; The gas station is equipped with loudspeaker communication; the persons which passed to independent work are allowed to work for gas station.

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